
LIMBURG.NET
DA'S PROPER GEDAAN
INNOVATIEF
VERANTWOORDELIJK
STERKE PARTNER

LIMBURG.NET IN NUMBERS

910k inhabitants in 43 municipalities

70 collection teams a day

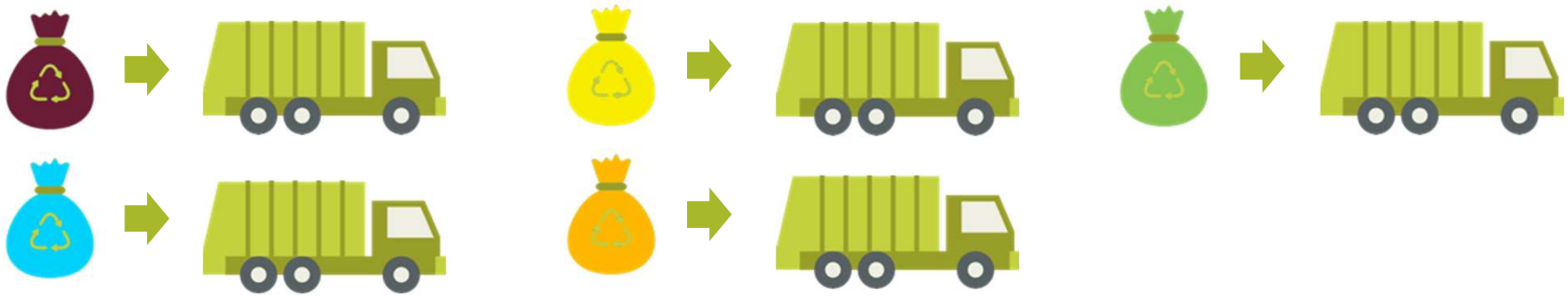
213 000 ton in 9 fractions

40 recycling parks

270 000 ton in 29 fractions

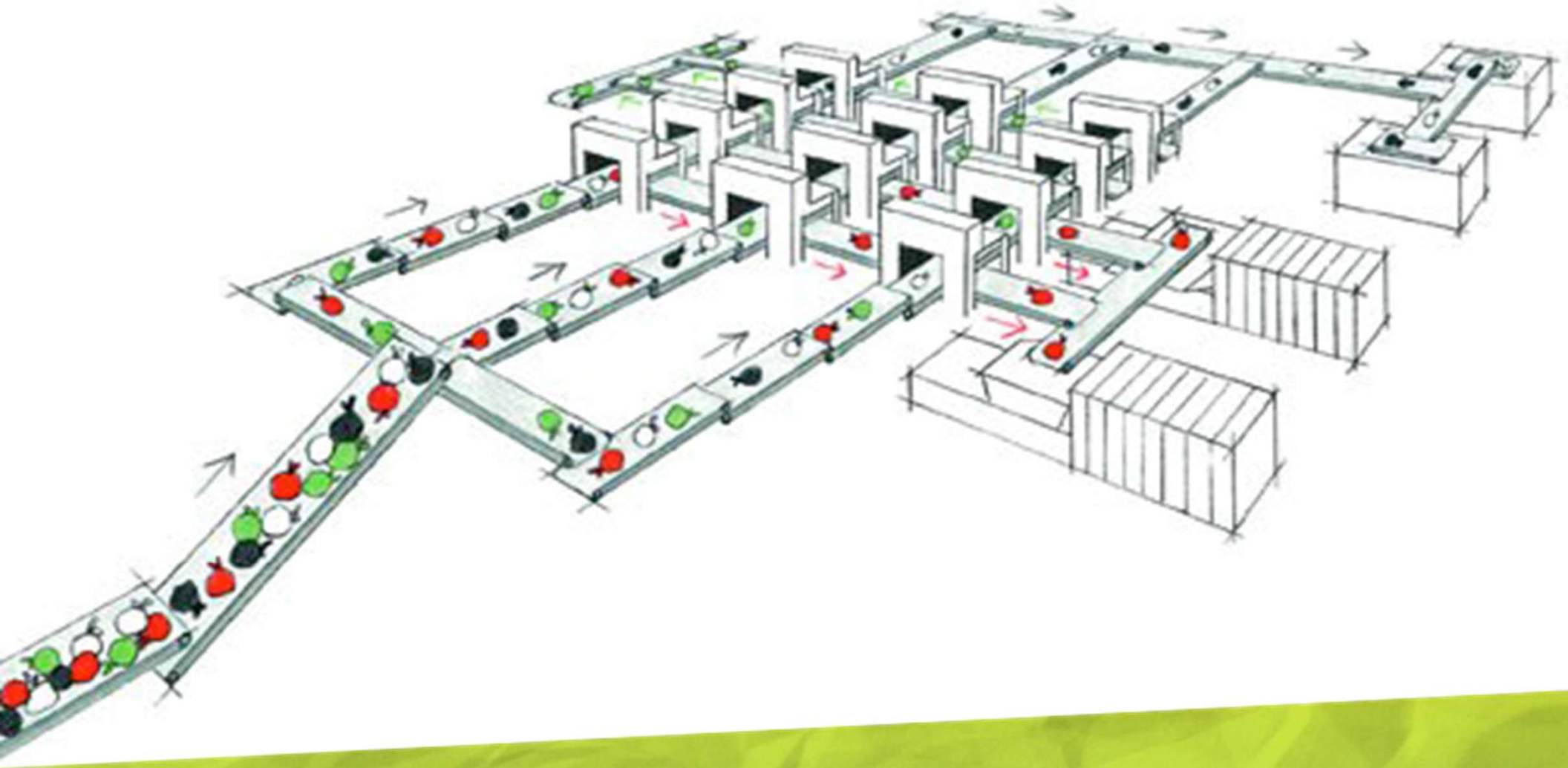
THE OPTIMO SYSTEM

Before

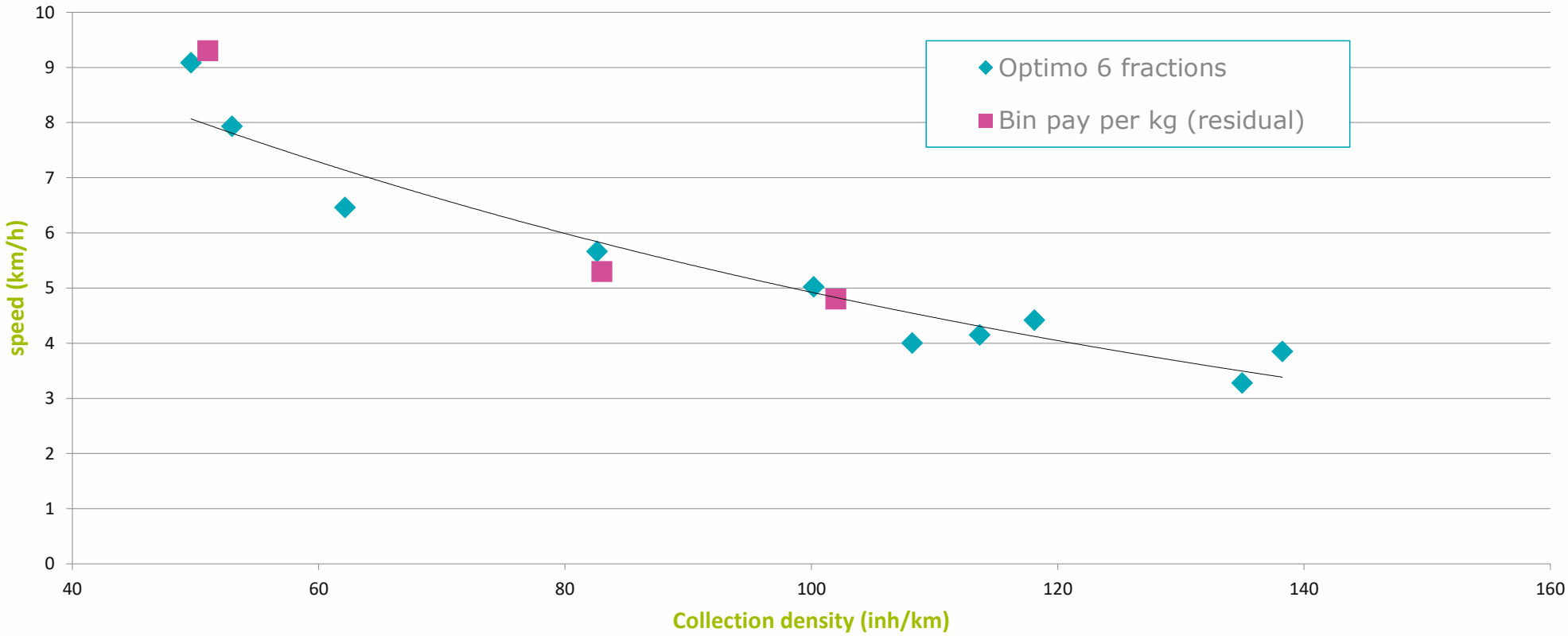


After

PRINCIPLE

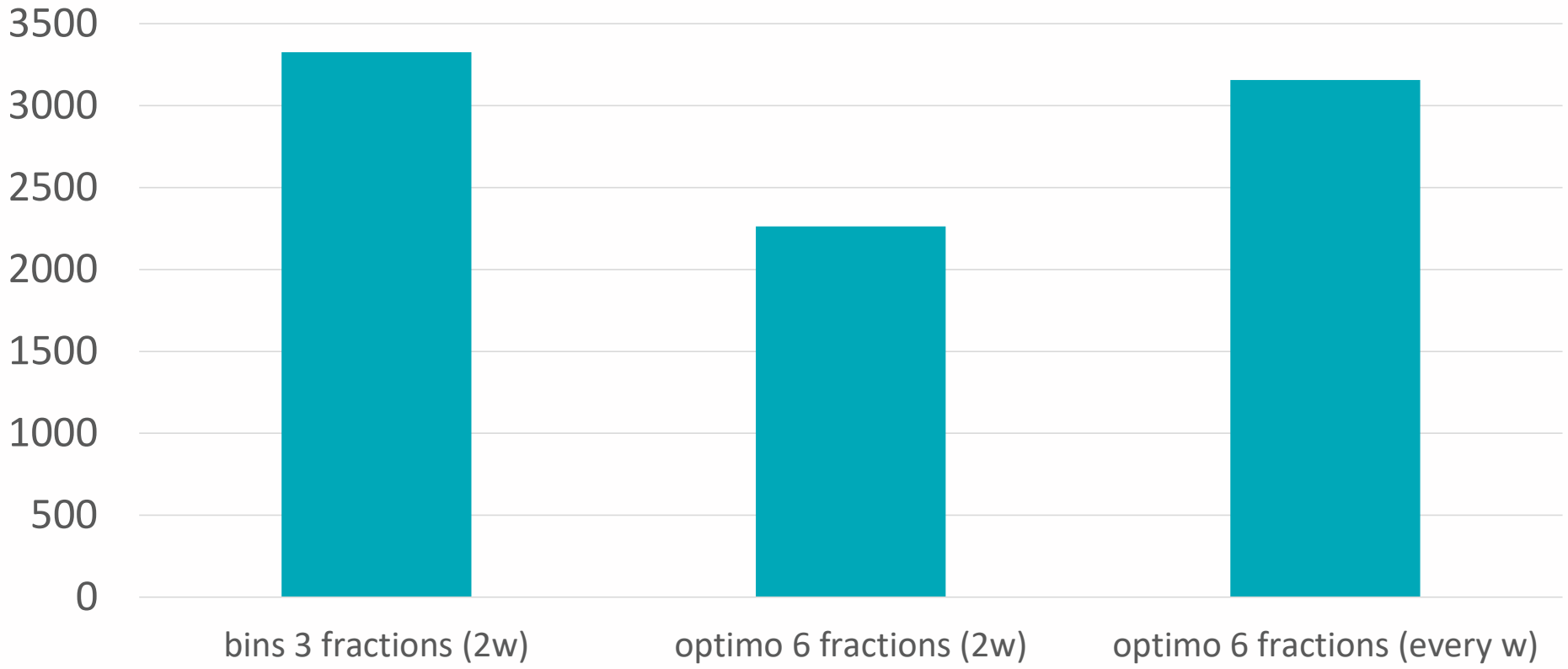


EFFICIENCY in collection speed data

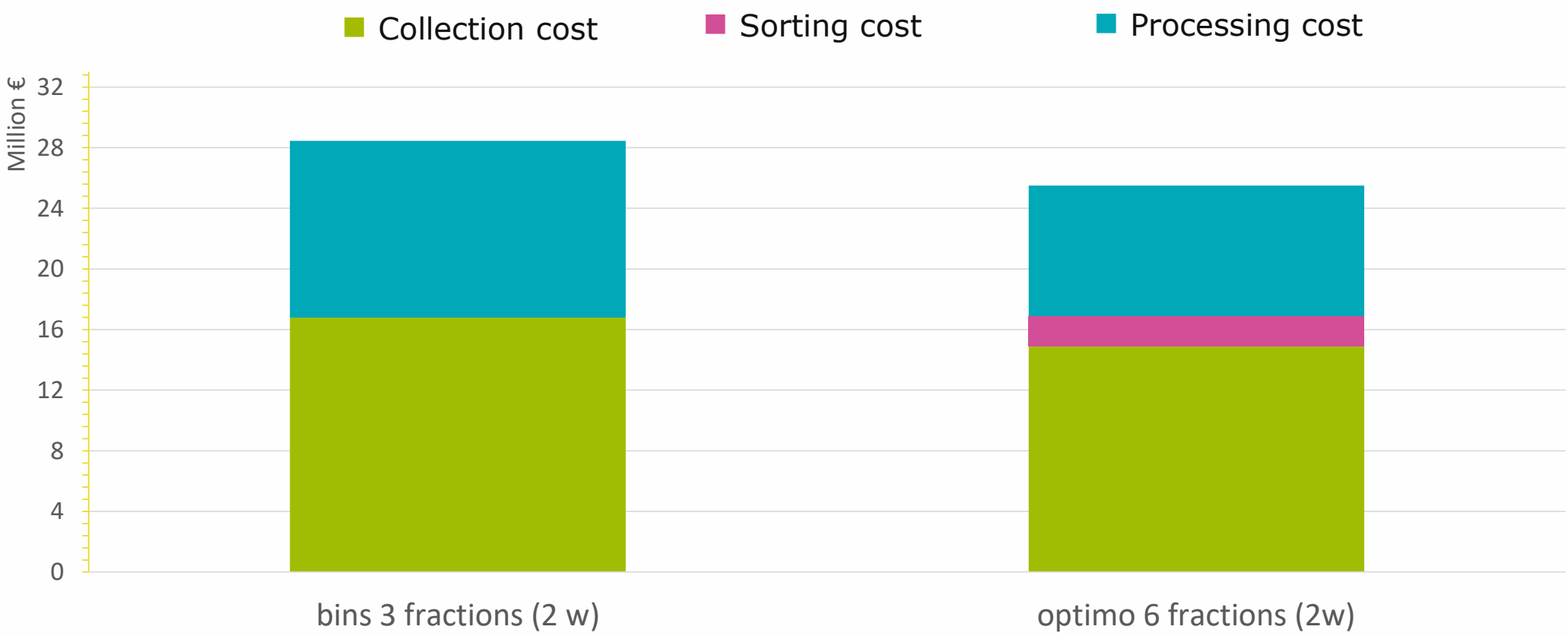


KILOMETERS/YEAR

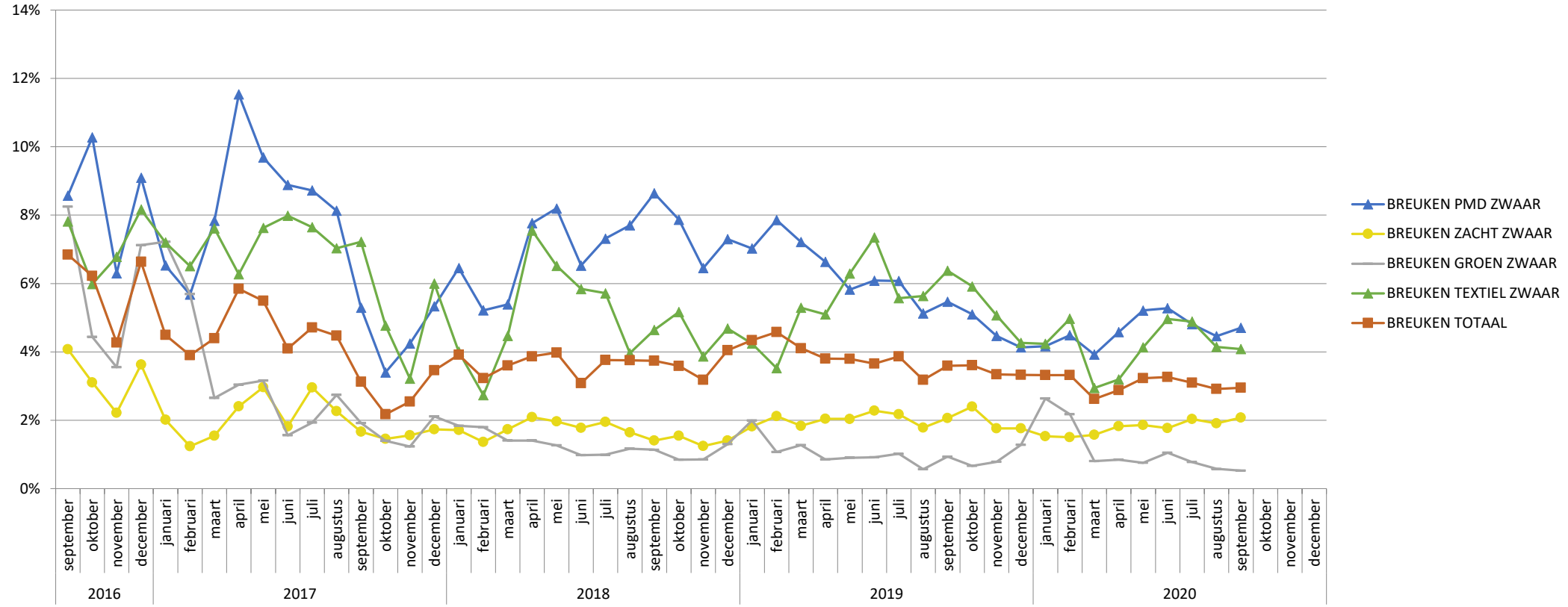
TON CO_2 /year


3500
3000
2500
2000
1500
1000
500
0
bins 3 fractions (2w)
optimo 6 fractions (2w)
optimo 6 fractions (every w)

COST


Collection cost
Sorting cost
Processing cost
Million €
32
28
24
20
16
12
8
4
0
bins 3 fractions (2 w)
optimo 6 fractions (2w)

Loss of bags?


14%
12%
10%
8%
6%
4%
2%
0%
BREUKEN PMD ZWAAR
BREUKEN ZACHT ZWAAR
BREUKEN GROEN ZWAAR
BREUKEN TEXTIEL ZWAAR
BREUKEN TOTAAL
september
oktober
november
december
januari
februari
maart
april
mei
juni
juli
augustus
september
oktober
november
december
2016
2017
2018
2019
2020

Improving the system

MARKET CONSULTATION

Several brainstorm sessions with all major constructors on the European market, process guidance by PIO and Verhaert

Conclusive report:

"Optimalisation and innovation are feasible, and bear opportunities for the entire sector"

INNOVATION TENDER

LAUNCH R&D TENDER

- Information sessions for all constructors involved
- Explaining the set-up:
  - 2 phase: PoP and PoC
  - Multiple parties possible
- Determing evaluation criteria and commission (PIO, Limburg.net, Bionerga, university)

GENERAL OBJECTIVE

Higher load of intact bags

AND
No dependency on operators!

Factors:

• Maximal tearing percentage	< 4%	(<2% including bag improvement)
• Load	280 kg/m3	
• Safety	compliance to norms/regulation	
• Ergonomy	load height = 1 m	
• Load speed	min ± 3 ton/h	
• Dimensions	H < 3m85	
	L < 10m50	
	W < 2m55	

PHASED APPROACH

january '19 — end '19 — end '20

Conceive solutions

"proof of principle"

Develop, simulate, compare, experiment…

2 parties: VDK and VDL

Prototyping & validation

"proof of concept"

1. Building prototypes
2. Validate in the everyday practice with Limburg.net

2 parties: VDK and VDL

SET-UP: PRE-COMMERCIAL PURCHASE

Flanders

Max 250k

Limburg.net

Max 250k

Constructors

150k each

VDL SIDE LOADER

Conceptual

- Good results in stationary compaction block test
- Top loading: better than grabbing the waste with standard rear loader?
- Possibility to change containers

Criteria

Intact bags

- Only reasonable results below 4 tons

Load volume

- Possible efficiency gain by interchangeable containers
- But mitigated by tearing of bags over 4 tons loading weight

Cost

- + 50% extra capital investment
- Higher operational costs?

Load speed

- About 20% slower

VDL SIDE LOADER

Conceptual

- How to avoid cutting the bags with compaction plate by operators?
- More sensoring and setting up of fail-safes
- Enable compaction cycles while driving
- Enable automated compaction cycles with 3D fill grade cameras

Criteria

Intact bags

- Good results, comparable to reference
- Possible improvements on the table

Load volume

- 25m³ → 28m³

Cost

- Comparable to standard truck
- Efficiency gains by loading speed

Load speed

- Significantly faster than reference

Validation

EVALUATION

- **“Unsufficient”**
- **“Sufficient”**
- **“Succesful”**

Side loader

- “sufficient”, but no further action

Read loader

- “sufficient”, but possibly succesful after new iterations on sensoring
- 3D-camera and light screen (to enable compaction cycles while moving) technological innovations for the entire waste sector

SET-UP: INTELLECTUAL PROPERTY

1. No obligation to purchase a certain amount
2. Intellectual property for involved constructors, but “right of use” on new knowledge
3. Constructor has to market the technology at a fair price, if not there is cause for a “call-back” of this technology

COMMUNICATION ON THE RESULTS OF THE PROJECT

Information sessions in 2021:

- For the constructor market: preceding the tendering of Optimo collection trucks
- Private collection companies: preceding the tendering of Optimo collection contracts

"High level" information, no technical details

TENDER FOR TRUCKS

LIMBURG.NET
DA'S PROPER GEDAAN

Limburg.net

New fleet:

- 16 rear loader (3 axles, 28m³)
- 1 rear loader (2 axles, 21m³)

ITERATIONS

VDK

- sensor on load edge (fail-safe)
- software update
- New IR-camera

Terberg

- tests with “HCT”
- suggestions

PARTICIPANTS

- VDK Mol cy
- Terberg Rosroca
- Geesink Norba

RESULT

Limburg.net

- 9x VDK Optimo truck
- 8x Terberg Optimo truck

1x BEV Optimo truck currently in tender (2024)

PRIVATE COLLECTORS

Renewi:

- 25x VDK Optimo truck

Veolia:

- 2x VDK Optimo truck

Inroads to monostream collection:

- 28m³ for plastics collection
- Light screen (collection speed ↑ ↑)